

Appl. No. 10/770,619

Reply to Office Action of September 27, 2005

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. **(Currently Amended)** An ink jet recording medium comprising a support having thereon a porous layer containing micro particles of ground silica and a cross-linked hydrophilic binder which is cross-linked with ionizing radiation,

wherein the micro particles of ground silica have an average particle diameter of secondary particles of 10 - 300 nm and a weight ratio of the micro particles of ground silica to the hydrophilic binder in the porous layer is from 2.5:1 to 20:1.

2. **(Original)** The ink jet recording medium of claim 1, wherein the micro particles of ground silica have an average particle diameter of primary particles of 3 - 50 nm.

3. **(Original)** The inkjet recording medium of claim 1, wherein said micro particles of ground silica is synthesized with a gel method.

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4. (Original) The inkjet recording medium of claim 2, wherein said micro particles of ground silica is synthesized with a gel method.

5. (Currently Amended) An ink jet recording medium comprising a support having thereon a porous layer containing micro particles of silica and a cross-linked hydrophilic binder which is cross-linked with ionizing radiation,

wherein a specific surface area measured with BET method of the micro particles of silica is $40 - 100 \text{ m}^2/\text{g}$, and

a coefficient of variation in a primary particle distribution of the micro particles of silica is not more than 0.4 and a weight ratio of the micro particles of ground silica to the hydrophilic binder in the porous layer is from 2.5:1 to 20.1.

6. (Currently Amended) An ink jet recording medium comprising a support having thereon a porous layer containing micro particles of silica and a cross-linked hydrophilic binder being cross-linked with ionizing radiation,

wherein the micro particles of silica are gas phase method silica, and a ratio of isolated silanol groups of the micro

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particles of silica is 0.5 - 2.0 and a weight ratio of the micro particles of ground silica to the hydrophilic binder in the porous layer is from 2.5:1 to 20:1.

7. (Original) The ink jet recording medium of claim 6, wherein an average particle diameter of primary particles of said gas phase method silica is 5 - 50 nm, and a ratio of isolated silanol groups of the micro particles of silica is 0.5 - 1.5.

8. (Original) The ink jet recording medium of claim 1, wherein the hydrophilic binder comprises a polymer which is cross-linked by exposing ionizing radiation to a hydrophilic polymer of a degree of polymerization of at least 500, and a main-chain of the hydrophilic polymer having a plurality of side-chains.

9. (Original) The ink jet recording medium of claim 5, wherein the hydrophilic binder comprises a polymer which is cross-linked by exposing ionizing radiation to a hydrophilic polymer of a degree of polymerization of at least 500, and a main-chain of the hydrophilic polymer having a plurality of side-chains.

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10. (Original) The ink jet recording medium of claim 6, wherein the hydrophilic binder comprises a polymer which is cross-linked by exposing ionizing radiation to a hydrophilic polymer of a degree of polymerization of at least 500, and a main-chain of the hydrophilic polymer having a plurality of side-chains.

11. (Original) The ink jet recording medium of claim 8, wherein the hydrophilic polymer is an modified polyvinyl alcohol which is capable of cross-linking by ultraviolet ray, and a modification ratio of the side-chain to the main-chain is 0.01 - 4 mol%.

12. (Original) The ink jet recording medium of claim 9, wherein the hydrophilic polymer is an modified polyvinyl alcohol which is capable of cross-linking by ultraviolet ray, and a modification ratio of the side-chain to the main-chain is 0.01 - 4 mol%.

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13. (Original) The ink jet recording medium of claim 10, wherein the hydrophilic polymer is an modified polyvinyl alcohol which is capable of cross-linking by ultraviolet ray, and a modification ratio of the side-chain to the main-chain is 0.01 - 4 mol%.

14. (Original) The ink jet recording medium of claim 1, wherein the support is a non water-absorptive support.

15. (Original) The ink jet recording medium of claim 5, wherein the support is a non water-absorptive support.

16. (Original) The ink jet recording medium of claim 6, wherein the support is a non water-absorptive support.

17. (Original) A method for preparing the ink jet recording medium of claim 1, comprising the steps of:

coating on the support an coating composition so as to form a porous layer containing inorganic micro particles and a hydrophilic binder which is capable of cross-linking by ultraviolet ray;

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exposing ultraviolet ray to the porous layer by employing a metal halide lamp which has primary emission wavelength of 300 - 400 nm; and

drying the porous layer,
wherein the ultraviolet ray has an irradiation energy at a wavelength of 350 nm of 1 - 100 mJ/cm².

18. (Original) A method for preparing the ink jet recording medium of claim 5, comprising the steps of:

coating on the support an coating composition so as to form a porous layer containing inorganic micro particles and a hydrophilic binder which is capable of cross-linking by ultraviolet ray;

exposing ultraviolet ray to the porous layer by employing a metal halide lamp which has primary emission wavelength of 300 - 400 nm; and

drying the porous layer,

wherein the ultraviolet ray has an irradiation energy at a wavelength of 350 nm of 1 - 100 mJ/cm².

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19. (Original) A method for preparing the ink jet recording medium of claim 6, comprising the steps of:

coating on the support an coating composition so as to form a porous layer containing inorganic micro particles and a hydrophilic binder which is capable of cross-linking by ultraviolet ray;

exposing ultraviolet ray to the porous layer by employing a metal halide lamp which has primary emission wavelength of 300 - 400 nm; and

drying the porous layer,

wherein the ultraviolet ray has an irradiation energy at a wavelength of 350 nm of 1 - 100 mJ/cm².

Claim 20 (Cancel).

21. (Currently Amended) The ink jet recording medium of claim 1, wherein a weight ratio of the micro particles of ground silica to the hydrophilic binder in the porous layer is from **[[5]] 5:1 to 15:1**.